REMARKS

The Examiner has rejected claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,695,900 to Momose ("Momose '900") in view of U.S. Patent No. 6,749,675 to Momose ("Momose '675"). Claims 1-12 are currently pending. The following remarks are considered by Applicants to overcome each of the Examiner's outstanding rejections. An early Notice of Allowance is therefore requested.

I. SUMMARY OF RELEVANT LAW

The determination of obviousness rests on whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. In determining obviousness, four factors should be weighed: (1) the scope and content of the prior art, (2) the differences between the art and the claims at issue, (3) the level of ordinary skill in the art, and (4) whatever objective evidence may be present. Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor. The Examiner carries the burden under 35 U.S.C. § 103 to establish a prima facie case of obviousness and must show that the references relied on teach or suggest all of the limitations of the claims.

II. REJECTION OF CLAIMS 1-12 UNDER 35 U.S.C. § 103(A) BASED ON MOMOSE '900 IN VIEW OF MOMOSE '675

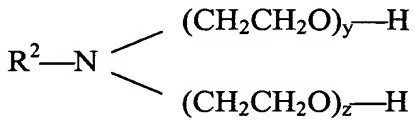
On page 2 of the Final Office Action, the Examiner rejects claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over Momose '900 in view of Momose '675. These rejections are respectfully traversed and believed overcome in view of the following discussion.

Claims 2 and 9

The Examiner contends that Momose '900 discloses at least one of the surfactants represented by Formula (2) and Formula (3) of the present application. See Office

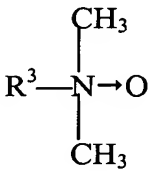
Action (8/28/06), P. 2-3. However, this assertion misconstrues the teachings of Momose '900. Namely, as is described in detail below, nowhere does Momose disclose either of the surfactants represented by Formula (2) or Formula (3).

Claims 2 and 9 both recite at least one of a surfactant represented by the formulae (2) and (3):



Formula (2)

wherein R^2 represents an alkyl group, and y + z is 5 to 15.

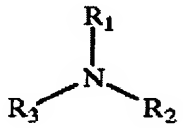


Formula (3)

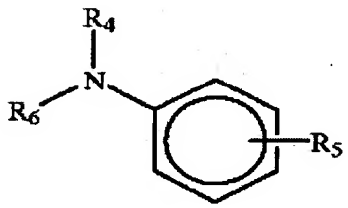
Wherein R^3 represents an alkyl group and N→O represents a semipolar bond of amine oxide in the formula (3).

Momose '900 discloses two formulas for amine compounds, Formula (A) and Formula (B). Momose '900, Col. 2, Lns. 47-65. Neither of these two formulas discloses Formula (3) of the current application, and Examiner does not contend otherwise. Similarly, neither of these two formulas discloses Formula (2) of the current application. Momose '900 discloses Formula (A) and Formula (B) as:

(A)



(B)



Wherein R_1 to R_6 each independently represents a hydrogen atom or an **alkyl or hydroxyalkyl chain** having from 1 to 8 carbon atoms, which may have a branch, provided that at least one of R_1 to R_3 is an alkyl or hydroxyalkyl chain having from 3 to 8 carbon atoms, which may have a branch. Momose '900, Col. 2, Lns. 47-65.

As such, each of R_1 to R_6 can only be one of sixteen different chains:

1. CH_3
2. CH_2CH_3 (C_2H_5)
3. $CH_2CH_2CH_3$ (C_3H_7)
4. $CH_2CH_2CH_2CH_3$ (C_4H_9)
5. $CH_2CH_2CH_2CH_2CH_3$ (C_5H_{11})
6. $CH_2CH_2CH_2CH_2CH_2CH_3$ (C_6H_{13})
7. $CH_2CH_2CH_2CH_2CH_2CH_2CH_3$ (C_7H_{15})
8. $CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_3$ (C_8H_{17})
9. CH_2OH
10. CH_2CH_2OH (C_2H_4—OH)
11. $CH_2CH_2CH_2OH$ (C_3H_6—OH)
12. $CH_2CH_2CH_2CH_2OH$ (C_4H_8—OH)
13. $CH_2CH_2CH_2CH_2CH_2OH$ (C_5H_{10}—OH)
14. $CH_2CH_2CH_2CH_2CH_2CH_2OH$ (C_6H_{12}—OH)
15. $CH_2CH_2CH_2CH_2CH_2CH_2CH_2OH$ (C_7H_{14}—OH)
16. $CH_2CH_2CH_2CH_2CH_2CH_2CH_2CH_2OH$ (C_8H_{16}—OH)

Chains 1-8 are all the alkyl chains with 1 to 8 carbon atoms, and chains 9-16 are all the hydroxyalkyl chains with 1 to 8 carbon atoms. Since none of the above sixteen options for R_1 to R_6 represents the N→O semipolar bond of amine oxide in Formula (3), Momose '900 does not disclose Formula (3) of the current Application. In addition, none of these sixteen chains satisfies either branch $(CH_2CH_2O)_y$—H or branch $(CH_2CH_2O)_z$—H of Formula (2) of the current Application.

The either y or z from Formula (2) must be at least 3. This is because y + z can be no less than 5 and no more than 15. When y + z = 5, the options are:

1. $y = 0, z = \mathbf{5}$
2. $y = 1, z = \mathbf{4}$
3. $y = 2, z = \mathbf{3}$
4. $y = \mathbf{3}, z = 2$
5. $y = \mathbf{4}, z = 1$
6. $y = \mathbf{5}, z = 0$

As can be seen, either y or z is greater than or equal to 3 at all times. Since the greatest y or z can be is 15, either y or z must be in the range of 3 to 15. As such, either $(CH_2CH_2O)_y$—H or $(CH_2CH_2O)_z$—H must be one of 13 possibilities:

1. $CH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_6H_{12}O_2$—OH)
2. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_8H_{16}O_3$—OH)
3. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{10}H_{20}O_4$—OH)
4. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{12}H_{24}O_5$—OH)
5. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{14}H_{28}O_6$—OH)
6. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{16}H_{32}O_7$—OH)
7. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{18}H_{36}O_8$—OH)
8. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{20}H_{40}O_9$—OH)
9. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{22}H_{44}O_{10}$—OH)
10. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{24}H_{48}O_{11}$—OH)

11. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2O$
$CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2O$
CH_2CH_2OH ($C_{26}H_{52}O_{12}$—OH)

12. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2O$
$CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2O$
$CH_2CH_2OCH_2CH_2OH$ ($C_{28}H_{56}O_{13}$—OH)

13. $CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2O$
$CH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2OCH_2CH_2O$
$CH_2CH_2OCH_2CH_2OCH_2CH_2OH$ ($C_{30}H_{60}O_{14}$—OH)

As can be seen above, none of the sixteen chain possibilities for Momose '900 Formula (A) disclose any of the thirteen possibilities that either $(CH_2CH_2O)_y$—H or $(CH_2CH_2O)_z$—H must be. In addition, Momose '900 discloses the chains as being either alkyl chains or hydroxyalkyl chains, whereas Formula (2) deals with an alkylamine ethylene oxide adduct. Therefore, Momose '900 fails to disclose the surfactant of Formula (2) wherein $y + z = 5$ to 15. Thus, Momose '900 fails to disclose each and every element as set forth in claims 2 and 9.

As such, Applicants respectfully assert that Examiner has failed to establish a prima facie case of anticipation of claims 2 and 9. Therefore, Applicants respectfully request that Examiner remove the rejection of claims 2 and 9 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,695,900 to Momose in view of U.S. Patent No. 6,749,675 to Momose.

Claim 3

Claim 3 specifies that "a ratio of change of the surface tension after storage at 60 °C for 2 weeks is less than 5%." Such a requirement is not disclosed in Momose '900 or Momose '675, and Examiner does not contend otherwise. Thus, it is impossible to combine Momose '900 and Momose '675 in a way that would teach or suggest all the limitations of Claim 3.

As such, Applicants respectfully assert that Examiner has failed to establish a prima facie case of anticipation of Claim 3. Therefore, Applicants respectfully request that

Examiner remove the rejection of Claim 3 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,695,900 to Momose in view of U.S. Patent No. 6,749,675 to Momose.

Claims 1, 4-8, 10, and 11

With respect to this rejection, the Examiner contends that

> "[I]t would have been obvious to one of ordinary skill in the art to use the anionic surfactant sodium polyoxyethylene oleyl ether sulfate as taught by Momose '675 in the ink composition of Momose '900, as Momose '900 broadly discloses anionic surfactants, **because Momose '675 teaches that sodium polyoxyethylene oleyl ether sulfate may be used in combination with a nonionic surfactant and self-dispersing pigment that produces an ink composition similar to that taught by Momose '900.**"

Office Action (8/28/06), P. 3 (emphasis added). However, this misconstrues the teachings of Momose '900 and Momose '675.

While obviousness may be found by combining references, absent a suggestion to combine the references such combination is inappropriate. It is insufficient that the prior art discloses the components of the claims sought to be patented. A teaching, suggestion or incentive to make the combination is required for the combination of the art to demonstrate obviousness.

The purpose of Momose '900 is to provide an aqueous ink composition with excellent ejection stability almost free of bubbling, prevent the occurrence of nozzle clogging, elevate printing density, and reduce drying time and bleeding. See Momose '900, Col. 2, Lns. 14-26. Momose '900 accomplishes this by use of an organic amine compoud represented by Formula (A) or Formula (B), as described above. See Momose '900, Col. 2, Lns. 39-65.

As Examiner has correctly stated, Momose '900 fails to teach the specific compound taught by Applicants represented by Applicants Formula (1), as set forth in Claim 1:

$R^1 — O — (CH_2CH_2O)_x — SO_3Na$ **Applicants Formula (1)**

Wherein R^1 represents an alkyl group and x is 20 to 30. See Office Action (8/28/06), P. 3. Furthermore, Momose '900 fails to teach any relationship between Momose '900 Formulas (A) or (B) and the coloring agent. Momose '900 certainly fails to teach any relationship between Momose '900 Formulas (A) or (B) and surface tension stability.

The purpose of Momose '675 is to improve "...solubility in water of an acetylene alcohol compound based surfactant of a strong hydrophobic structure...." Momose '675, Co. 1, Lns. 51-55. This purpose was achieved by combined use of a specific acetylene alcohol based surfactant and a specific surface active substance (another surfactant) capable of causing an effective amount of the acetylene alcohol based surfactant to dissolve in water. Momose '675, Col. 1, Lns. 55-60. One of these other surfactants taught is Momose '675 Formula (21e):

$R_{15}O(CH_2CH_2O)_{j1}SO_3M_2$ **Momose '675 Formula (21e)**

Wherein R_{15} represents a $C_{1\text{-}15}$ alkyl group which may be branched, subscript j1 stands for 1 to 30, and M_2 represents a hydrogen atom, an alkali metal or a base such as ammonium. Momose '675, Col. 2, Lns. 24-54. Specific examples of Momose '675 Formula (21e) include sodium polyoxyethylene oleyl ether sulfate.

The only teaching of Momose '675 is to use Momose '675 Formula (21e) to cause "the acetylene alcohol based surfactant to **dissolve in water**...," it fails teach any relationship between Momose '675 Formula (21e) and any coloring agent, let alone the ability of Momose '675 Formula (21e) to suspend a water-insoluble particulate coloring agent in a water base ink. Momose '675, Col. 5, Lns. 12-15 (emphasis added). Momose '675 also fails to teach any relationship between Momose '675 Formula (21e) and surface tension stability. Unless a composition contains an acetylene alcohol based surfactant, which Momose '900 does not, there is no motivation to one of skill in the art to add Momose '675 Formula (21e) to that composition.

It is also important to note that neither Momose '900 nor Momose '675 teach any interaction between, or effects from combining, Momose '900 Formulas (A) or (B) and

Momose '675 Formula (21e). Furthermore, neither Momose '900 nor Momose '675 teach to the problem addressed in the present application of surfactant absorption to a water-insoluble particulate coloring agent. Application (as published), P. 1, ¶ [0008].

Since Momose '675 only teaches the use of a surfactant with a nitrogen atom in combination with an acetylene alcohol based surfactant to cause "the acetylene alcohol based surfactant to **dissolve in water**...," and Momose '900 contains no acetylene alcohol based surfactant, Applicants respectfully asserts one of ordinary skill in the art would find no motivation to add the surfactant of Momose '675 to the composition of Momose '900. There is no motivation to combine the two references above to arrive at Applicants' invention as defined in independent Claim 1. As such, Applicants respectfully assert that Examiner has failed to establish a prima facie case of obviousness of independent Claim 1 and corresponding claims 2-12 because they are dependant from Claim 1. Therefore, Applicants respectfully request that Examiner remove the rejection of claims 1-12 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,695,900 to Momose in view of U.S. Patent No. 6,749,675 to Momose.

Based upon the above remarks, Applicants respectfully requests reconsideration of this application and its early allowance. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,

for _____ Reg. No. 50,900

~~Eugene~~ LeDonne – Reg. No. 35,930
REEDSMITH LLP
599 Lexington Avenue
New York, NY 10022
Tel.: 212.521.5400

ED:JWT

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